Toxics Release Inventory (TRI) Basis of OSHA Carcinogens

Under the TRI Program, a chemical does not have to be counted towards threshold determinations and release and other waste management calculations if it is present in a mixture below a certain concentration. This is known as the "*de minimus*" concentration in mixture. In the final rule (53 FR 4500, Feb. 16, 1988) that implemented the reporting requirements of section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) (aka TRI), EPA adopted a *de minimis* exemption which permits facilities to disregard *de minimis* levels of toxic chemicals for threshold and reporting calculations. The rule adopted a 0.1% *de minimis* level for chemicals which are carcinogens as defined under the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200). Subsequently, EPA incorporated language from the OSHA regulations into the EPCRA section 313 regulations at 40 CFR §372.38(a) which reads as follows:

> "(a) *De minimis concentrations of a toxic chemical in a mixture.* (1) If a toxic chemical is present in a mixture of chemicals at a covered facility and the toxic chemical is in a concentration in the mixture which is below 1 percent of the mixture, or 0.1 percent of the mixture in the case of a toxic chemical which is a carcinogen, a person is not required to consider the quantity of the toxic chemical present in such mixture when determining whether an applicable threshold has been met under §372.25 or determining the amount of release to be reported under §372.30. For purposes of the exemption in this paragraph (a), the following sources establish a chemical as a carcinogen or potential carcinogen:
>
> (i) National Toxicology Program (NTP), Annual Report on Carcinogens (latest edition);
>
> (ii) International Agency for Research on Cancer (IARC) Monographs (latest editions); or
>
> (iii) 29 CFR part 1910, subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration."

The *de minimus* limitation is 1.0 percent for chemicals that do not meet the above carcinogen criteria. The carcinogen designation in the list of chemicals relates to any chemical that the Agency determined met the above criteria for the 0.1 percent *de minimus* limitation. For convenience purposes, EPA refers to these chemicals as the "OSHA carcinogens." Certain metal compound categories have two *de minimus* limitations. For example, hexavalent chromium compounds and inorganic arsenic compounds meet the carcinogen criteria, while trivalent chromium compounds and organic arsenic do not meet the carcinogen criteria. In addition, there are no *de minimis* levels for chemicals listed in 40 CFR §372.28 "Lower thresholds for chemicals of special concern," except for supplier notification purposes.

The following table shows the specific basis for which chemicals have been designated as a known or suspect carcinogen.

Basis of OSHA Carcinogen Listing for TRI Chemicals			
Chemical Name	**IARC**	**NTP**	**OSHA–Z**
Acetaldehyde	2B	RA	–
Acetamide	2B	–	–
2-Acetylaminofluorene	–	RA	Z
Acrylamide	2A	RA	–
Acrylonitrile	2B	RA	Z
2-Aminoanthraquinone	–	RA	–
4-Aminoazobenzene	2B	–	–
4-Aminobiphenyl	1	K	Z
1-Amino-2,4-dibromoanthraquinone	2B	RA	–
1-Amino-2-methylanthraquinone	–	RA	–
Amitrole	–	RA	–
o-Anisidine	2B	–	–
o-Anisidine hydrochloride	–	RA	–
Arsenic and inorganic arsenic compounds	1	K*	Z
Asbestos (friable)	1	K	Z
Benzene	1	K	Z
Benzidine	1	K	Z
Benzoic trichloride	2B	RA	–
Beryllium and beryllium compounds	1	RA*	–
2,2-Bis(bromomethyl)-1,3-propanediol	2B	RA	–
Bis(chloromethyl)ether	1	K	Z
1-Bromopropane	2B	RA	–
1,3-Butadiene	2A	K	–
1,2-Butylene oxide	2B	–	–
Cadmium and cadmium compounds	1	K*	Z
Carbon tetrachloride	2B	RA	–
Catechol	2B	–	–
Chlordane	2B	–	–
Chlorendic acid	2B	RA	–
p-Chloroaniline	2B	–	–
Chloroform	2B	RA	–
Chloromethyl methyl ether	1	K	Z
3-Chloro-2-methyl-1-propene	2B	RA	–
Chlorophenols	2B	–	–
Chloroprene	2B	RA	–
Chlorothalonil	2B	–	–
p-Chloro-*o*-toluidine	2A	RA	–
Chromium (VI) compounds	1	K	–
C.I. Acid Red 114	2B	–	–
C.I. Direct Black 38	2A	K	–
C.I. Direct Blue 6	2A	K	–
C.I. Direct Brown 95	2A	–	–
C.I. Food Red 5	2B	–	–
C.I. Solvent Yellow 3	2B	RA	–

C.I. Solvent Yellow 34 (Auramine)	2B	–	–
Cobalt and cobalt compounds	2B	RA*	–
Creosote	2A	K	–
p-Cresidine	2B	RA	–
Cumene	2B	RA	–
Cupferron	–	RA	–
2,4-D**	2B	–	–
2,4-D butoxyethyl ester**	2B	–	–
2,4-D butyl ester**	2B	–	–
2,4-D chlorocrotyl ester**	2B	–	–
2,4-D 2-ethylhexyl ester**	2B	–	–
2,4-D 2-ethyl-4-methylpentyl ester**	2B	–	–
2,4-Diaminoanisole	2B	–	–
2,4-Diaminoanisole sulfate	–	RA	–
4,4'-Diaminodiphenyl ether	2B	–	–
2,4-Diaminotoluene	2B	RA	–
Diaminotoluene (mixed isomers)	2B	RA	–
Diazinon	2A	–	–
1,2-Dibromo-3-chloropropane	2B	RA	Z
1,2-Dibromoethane	2A	RA	–
1,4-Dichlorobenzene	2B	RA	–
Dichlorobenzene (mixed isomers)	2B	RA	–
3,3'-Dichlorobenzidine	2B	RA	Z
3,3'-Dichlorobenzidine dihydrochloride	2B	RA	Z
3,3'-Dichlorobenzidine sulfate	2B	RA	Z
Dichlorobromomethane	2B	RA	–
1,2-Dichloroethane	2B	RA	–
Dichloromethane	2A	RA	Z
1,2-Dichloropropane	1	–	–
trans-1,3-Dichloropropene	2B	–	–
1,3-Dichloropropylene	2B	RA	–
Dichlorvos	2B	–	–
Diepoxybutane	2B	RA	–
Di-(2-ethylhexyl)phthalate	–	RA	–
Diethyl sulfate	2A	RA	–
Diglycidyl resorcinol ether	2B	RA	–
Dihydrosafrole	2B	–	–
3,3'-Dimethoxybenzidine	2B	RA	–
3,3'-Dimethoxybenzidine dihydrochloride	2B	RA	–
3,3'-Dimethoxybenzidine hydrochloride	2B	RA	–
4-Dimethylaminoazobenzene	2B	RA	Z
3,3'-Dimethylbenzidine	2B	RA	–
3,3'-Dimethylbenzidine dihydrochloride	2B	RA	–
3,3'-Dimethylbenzidine dihydrofluoride	2B	RA	–
Dimethylcarbamyl chloride	2A	RA	–
N,N-Dimethylformamide	2A	–	–
1,1-Dimethylhydrazine	2B	RA	–

Dimethyl sulfate	2A	RA	–
2,4-Dinitrotoluene	2B	–	–
2,6-Dinitrotoluene	2B	–	–
1,4-Dioxane	2B	RA	–
1,2-Diphenylhydrazine	–	RA	–
2,4-D isopropyl ester**	2B	–	–
2,4-DP**	2B	–	–
2,4-D propylene glycol butyl ether ester**	2B	–	–
2,4-D sodium salt**	2B	–	–
Epichlorohydrin	2A	RA	–
Ethyl acrylate	2B	–	–
Ethyl benzene	2B	–	–
Ethyleneimine	–	–	Z
Ethylene oxide	1	K	Z
Ethylene thiourea	–	RA	–
Formaldehyde	1	K	Z
Furan	2B	RA	–
Glycidol	2A	RA	–
Heptachlor	2B	–	–
Hexachlorobenzene	2B	RA	–
alpha-Hexachlorocyclohexane	2B	RA	–
Hexachloroethane	2B	RA	–
Hexamethylphosphoramide	2B	RA	–
Hydrazine	2A	RA	–
Hydrazine sulfate (1:1)	–	RA	–
Isoprene	2B	RA	–
Lead and inorganic lead compounds	2A	RA	Z
Lindane	1	RA	–
Malathion	2A	–	–
Mecoprop**	2B	–	–
2-Mercaptobenzothiazole	2A	–	–
Methoxone**	2B	–	–
Methoxone sodium salt**	2B	–	–
4,4'-Methylenebis(2-chloroaniline)	1	RA	–
4,4'-Methylenebis(*N,N*-dimethyl)benzeneamine	2B	RA	–
4,4'-Methylenedianiline	2B	RA	Z
Methyleugenol	2B	RA	–
Methyl isobutyl ketone	2B	–	–
Michler's ketone	–	RA	–
Molybdenum trioxide	2B		–
Mustard gas	1	K	–
Naphthalene	2B	RA	–
alpha-Naphthylamine	–	–	Z
beta-Naphthylamine	1	K	Z
Nickel	2B	RA	–
Nickel compounds	1	RA*	–
Nitrilotriacetic acid	–	RA	–

o-Nitroanisole	2B	RA	–
Nitrobenzene	2B	RA	–
4-Nitrobiphenyl	–	–	Z
Nitrofen	2B	RA	–
Nitrogen mustard	2A	–	–
Nitromethane	2B	RA	–
2-Nitropropane	2B	RA	–
N-Nitrosodi-*n*-butylamine	2B	RA	–
N-Nitrosodiethylamine	2A	RA	–
N-Nitrosodimethylamine	2A	RA	Z
N-Nitrosodi-*n*-propylamine	2B	RA	–
N-Nitroso-*N*-ethylurea	2A	RA	–
N-Nitroso-*N*-methylurea	2A	RA	–
N-Nitrosomethylvinylamine	2B	RA	–
N-Nitrosomorpholine	2B	RA	–
N-Nitrosonornicotine	1	RA	–
N-Nitrosopiperidine	2B	RA	–
o-Nitrotoluene	2A	RA	–
Parathion	2B	–	–
2,3,4,7,8-Pentachlorodibenzofuran	1		
Pentachlorophenol	2B	–	–
Perfluorooctanoic acid	2B		
Phenolphthalein	2B	RA	–
Phenytoin	2B	RA	–
Polybrominated biphenyls (PBBs)	2A	RA	–
Polychlorinated alkanes (C12, 60% chlorinated)	–	RA	–
Polychlorinated biphenyls (PCBs)	1	RA	–
Polycyclic aromatic compounds (PACs):	2B		–
Benz[a]anthracene	2A	P	–
Benzo[b]fluoranthene	2B	P	–
Benzo[j]fluoranthene	2B	P	–
Benzo[k]fluoranthene	2B	P	–
Benzo[rst]pentaphene	2B	–	–
Benzo[a]pyrene	2A	P	–
Dibenz[a,h]acridine	2A	P	–
Dibenz[a,j]acridine	2B	P	–
Dibenzo[a,h]anthracene	2B	P	–
7H–Dibenzo[c,g]carbazole	2B	P	–
Dibenzo[a,e]pyrene	2B	P	–
Dibenzo[a,h]pyrene	2B	P	–
Dibenzo[a,l]pyrene	2B	P	–
7,12–Dimethylbenz[a]anthracene	2B	–	–
1,6-Dinitropyrene	2B	P	–
1,8-Dinitropyrene	2B	P	–
Indeno[1,2,3-cd]pyrene	2B	P	–
5–Methylchrysene	2B	P	–
6-Nitrochrysene	2B	P	–

1-Nitropyrene	2B	P	–
4-Nitropyrene	2B	P	–
Potassium bromate	2B	–	–
Propane sultone	2A	RA	–
beta-Propiolactone	2B	RA	Z
Propyleneimine	2B	RA	–
Propylene oxide	2B	RA	–
Pyridine	2B		
Safrole	2B	RA	–
Sodium pentachlorophenate	–	RA	–
Sodium *o*-phenylphenoxide	2B	–	–
Styrene	2B	RA	–
Styrene oxide	2A	–	–
2,3,7,8-Tetrachlorodibenzo-*p*-dioxin	1	K	–
1,1,1,2-Tetrachloroethane	2B	–	–
1,1,2,2-Tetrachloroethane	2B	–	–
Tetrachloroethylene	2A	RA	–
Tetrachlorvinphos	2B	–	–
Tetrafluoroethylene	2A	RA	–
Tetranitromethane	2B	RA	–
Thioacetamide	2B	RA	–
4,4'-Thiodianiline	2B	RA	–
Thiourea	–	RA	–
Toluene-2,4-diisocyanate	2B	RA	–
Toluene-2,6-diisocyanate	2B	RA	–
Toluene diisocyanate (mixed isomers)	2B	RA	–
o-Toluidine	1	RA	–
o-Toluidine hydrochloride	–	RA	–
Toxaphene	2B	RA	–
Trichloroethylene	1	K	–
2,4,6-Trichlorophenol	2B	RA	–
1,2,3-Trichloropropane	2A	RA	–
Tris(2,3-dibromopropyl)phosphate	2A	RA	–
Trypan blue	2B	–	–
Urethane	2B	RA	–
Vinyl acetate	2B	–	–
Vinyl bromide	2A	–	–
Vinyl chloride	1	K	Z
Vinyl fluoride	2A	RA	–
Vinylidene chloride	2B		
2,6-Xylidine	2B	–	–
Note: The list of TRI chemicals meeting the §372.38(a) carcinogen standard and, therefore, not reported when in a mixture at a concentration level below the de minimus level of 0.1% has been updated, and this list reflects the update.			
IARC: 1–The chemical is carcinogenic to humans; 2A–The chemical is probably carcinogenic to humans; 2B–The chemical is possibly carcinogenic to humans.			
NTP: K–The chemical is known to be a human carcinogen; RA–The chemical is reasonably anticipated to be a human carcinogen.			

OSHA: Z–The chemical appears at 29 CFR part 1910 Subpart Z.
* Certain compounds.
** Chlorophenoxy herbicides (IARC 2B).